Rare presentation of a Giant thrombosed aneurysm arising from the P2 segment of the right PCA in a 30-month-old child: A Case Report

Shashank Nahar[1], Piyush Panchariya[2]

[1,2] Department of Neurosurgery, MGM Medical College, Indore (M.P), India

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Abstract

Brain aneurysms incidence is rare in children. Out of all intracranial aneurysms, posterior cerebral artery aneurysms (PCA) represent approximately 1% of all intracranial aneurysms Pediatric cerebral aneurysms are associated with a variety of systemic and intracranial disorders. We have reported a rare case of a giant thrombosed aneurysm arising from the P-2 segment of the right PCA in a 30-month-old child who presented to us. This case report was undertaken to understand the clinical presentation and radiological features of the PCA segment aneurysm in a pediatric age group so that it be early diagnosed and can be early managed to prevent pediatric mortality.

Abbreviations: PCA - posterior cerebral artery aneurysms, CT – Computed tomography, MRI – Magnetic resonance imaging

Keywords :Intracranial aneurysm, Case report, Children, posterior cerebral artery

Introduction

Brain aneurysms affect almost exclusively the adult population, and its incidence in children is rare.[1] Studies have reported a rough estimate of 1 to 3 cases of a childhood aneurysm per 1 million population.[2] Childhood aneurysms most often become symptomatic from birth to age 6 and then from 8 years to adolescence. A peak in the first six months characterizes the early childhood group with the majority of cases occurring within the first two years of life.[3] Out of all intracranial aneurysms, posterior cerebral artery aneurysms (PCA) represent approximately 1% of all intracranial aneurysms. [4] The PCA can be subdivided into four anatomic segments. Each of these segments gives off groups of branches that supply distinct anatomic territories: brain stem and thalamic branches, ventricular branches, and cortical branches. Aneurysms arising from the PCA have a predilection for the P1 and P2 segments. [5] These aneurysms have some peculiar morphologic features and present with specific clinical findings that distinguish them from aneurysms occurring at other anatomic locations of the intracranial circulation. Pediatric cerebral aneurysms are associated with a variety of systemic and intracranial disorders. The most common conditions associated with increased risk of pediatric cerebral aneurysm include coarctation of the aorta, polycystic kidney disease, fibromuscular dysplasia, tuberous sclerosis, Ehlers-Danlos syndrome, Marfan syndrome, and certain familial syndromes.[2] We have

reported the rare case of a pediatric giant intracranial PCA segment aneurysm in a 30-month-old child to understand the morphological, clinical, and radiological presentation of this aneurysm in a child.

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Address for correspondence:
Dr Shashank Nahar
Assistant professor, Neurosurgery Department
MGM Medical College, A.B road Indore (M.P),India
Email: naharshashank@gmail.com

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Case Report

We report a case of a 30-month-old child who presented to us with complaints of headache, vomiting, seizures, and difficulty in walking for 1 month. On examination, the patient had an increased circumference of the head and papilledema was present on fundoscopy. The patient initially underwent CT brain plain (as shown in figure1), suggestive of 5.8 * 5.9 cm size heterogenous mass lesion arising from the posterior part of right lateral ventricle and extending in periventricular region with peripheral calcification and having a central hyper density, mass lesion was causing mass effect and compression to CSF outflow pathway leading to obstructive hydrocephalus. Patient was admitted in our hospital and underwent an MRI brain plain + contrast which showed a mass lesion inside the posterior aspect of the Rt lateral ventricle and was also extending outside of the lateral ventricle of size 5.8 * 5.9 cm which was hyperintense in T-1 and T-2 and with central well defined enhancing lesion measuring 2.5 * 2.4 cm of size as shown in Figure 2. Pt later underwent CT brain angiography which suggested that the mass lesion was a thrombosed giant saccular aneurysm arising from the P2 segment of the right PCA. (Shown in Figure 3)

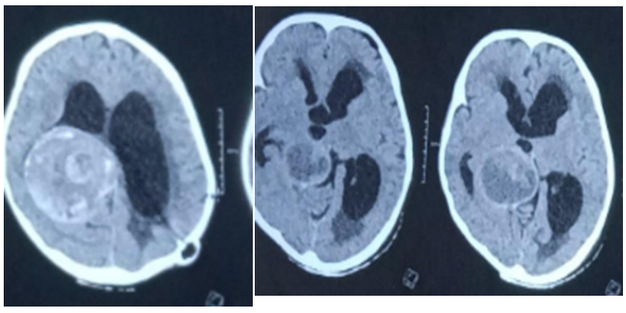


Figure 1: CT brain Plain showing the heterogenous mass lesion arising from the right posterior part of lateral ventricle with outside extension (shown by green arrow), having central mass (shown by blue arrow) and peripheral calcifications (shown by orange arrow) with obstructive hydrocephalus.

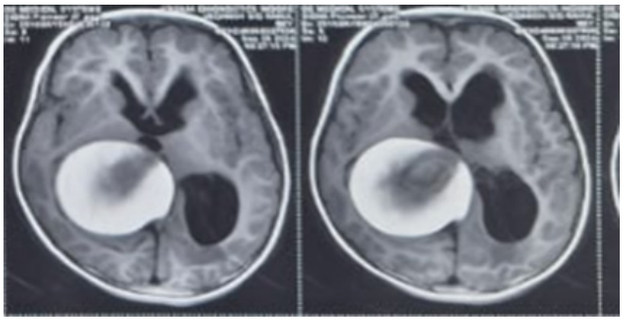


Figure 2: MRI with T1, T2 images, and contrast T1 image.

Figure 2.1: T-1 MRI shows a hyperintense giant saccular aneurysm of size 5.8 * 5.9 cm in the right lateral ventricle (shown by blue arrow) with extension outside of the ventricle causing mass effect and having a small 2.5 * 2.4 cm hypointense thrombosed area in the center (shown by yellow arrow)

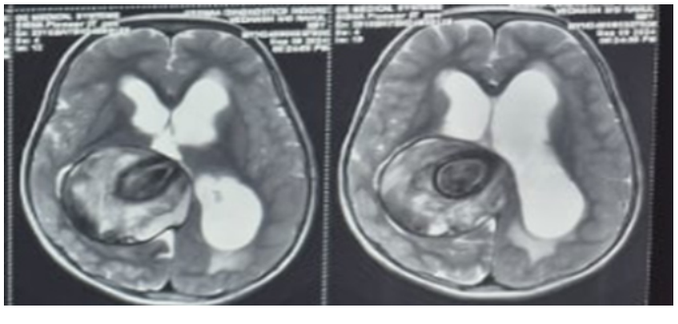


Figure 2.2: T-2 MRI shows a hyperintense Giant aneurysm (shown by blue arrow) in the right lateral ventricle having a hypointense thrombosed aneurysm in the center (shown by orange arrow)

Figure 2.3: *Shows contrast MRI image: A homogenous contrast-enhancing mass (shown by orange arrow) of aneurysmal sac having a central homogenous contrast-enhancing mass suggestive of thrombus (shown by violet arrow) with hypointense peripheral rim.*

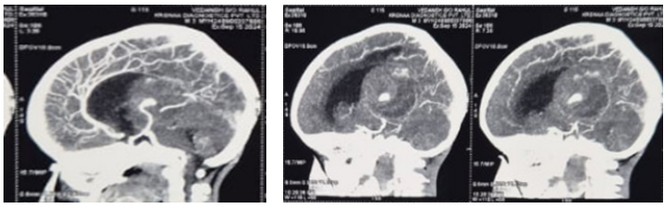
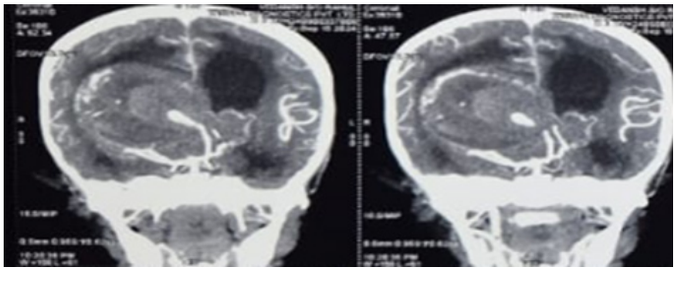


Figure 3: Shows a giant thrombosed aneurysm arising from the anomalous feeder of the P2 segment of the Rt PCA (as shown by the orange arrow)



Discussion

Intracranial aneurysms in children are very rare. 1 Among all intracranial aneurysms, posterior cerebral artery (PCA) aneurysms are among the least common intracranial aneurysms in pediatric age group and little is known of their clinical and radiological presentation and prognosis. In, our case reports the age of the presentation of PCA segment aneurysm was in a 30-month-old pediatric male child. Phoebe A. Kaplan and Francis J. Hahn have also reported 2 rare cases of PCA segment aneurysms in 2 years and 5 years of pediatric age group. 6 The aneurysm in our case report was giant type > 3cm in size.[7] Giant aneurysms of children occur with far greater frequency as reported in other studies. [3] The PCA segment aneurysm reported by us was arising from the P2 segment. Gerber CJ & Neil-Dwyer G have also reported that the aneurysm arising from PCA have more predilection to arise from the P1 and P2 segments[5] . The aneurysm in our study presented with the symptoms of mass effect causing obstructive hydrocephalus leading to features of raised ICT. Amacher AL and Drake CG also reported that

in children as the aneurysms are large, they mainly produce symptoms by compression of surrounding structures.[8]

Conclusion

Aneurysms of the PCA in the pediatric population are extremely rare, so there is limited information about their clinical presentation and prognosis. PCA aneurysms should be diagnosed early because the artery supplies vital structures such as the midbrain, thalamus, and visual cortex. In the pediatric age group, these aneurysms are usually large and present with symptoms of mass effect. However, early radiological diagnosis can lead to further management that prevents rupture and mortality in pediatric patients. Our case report will benefit other neurosurgeons in understanding the clinical presentation and radiological diagnosis of these aneurysms.

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